REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claim 1 to recite that the insulating resin composition layer is formed of at least one sub-layer; and to recite that the connection conductor includes at least two metal layers. In connection with these amendments to claim 1, note, for example, Fig. 4(f) of Applicants' original disclosure, together with the discussion in connection therewith on, e.g., page 23 of Applicants' specification. See also Fig. 5(a) and (b), and the description in connection therewith on pages 33 and 34 of Applicants' specification. See also the paragraph bridging pages 17 and 18 of Applicants' specification. Note also Fig. 1(d) and the corresponding description in connection therewith, in the paragraph bridging pages 11 and 12 of Applicants' specification. Applicants have amended claim 5, as discussed infra.

Moreover, Applicants have cancelled all non-elected claims previously in the application, without prejudice or disclaimer, and in particular without prejudice to the filing of a Divisional application or applications directed thereto.

In addition, Applicants are adding new claims 40-49 to the application. Claims 40 and 41, dependent respectively on claims 2 and 1, recite that each of the at least two metal layers is disposed within the insulating resin composition layer, with the connection conductor being exposed at a surface of the insulating resin composition layer. Claims 42 and 47, dependent respectively on claims 41 and 1, recites that the at least two metal layers include a first metal layer of a first metal and a second metal layer of a second metal different from the first metal; and claims 43, 44, 48, and 49, dependent respectively on claims 42, 47, and 47, recite that the first metal layer is thicker than the second metal layer with claims 43 and 48 also reciting that the second metal is more expensive than the first metal. Claims 45 and 46, each

dependent on claim 1, respectively recites that at least one sub-layer of the insulating resin composition layer, which is at least one of a front surface layer or a rear surface layer of the insulating resin layer, contains a liquid crystal polymer; and recites that the insulating resin composition layer includes at least two sub-layers.

In connection with the newly added claims, note, for example, the paragraph bridging pages 15 and 16 of Applicants' specification, as well as pages 13 and 14 thereof. See also pages 11 and 12 thereof.

It is respectfully submitted that all claims presently pending in the application read on the elected Group and elected Specie, and are to be considered on the merits in the above-identified application.

The objection to claim 5 as set forth in Item 2 on page 2 of the Office Action mailed March 5, 2007, is noted. Applicants have amended claim 5, in light of amendments to claim 1, to recite that at least one sub-layer of the insulating resin composition layer, placed at at least one of front and rear outermost layers of the insulating resin composition layer, is mainly made of thermoplastic resin. Thus, it is respectfully submitted that claim 5 as presently amended is clear with respect to the sub-layer "mainly made of thermoplastic resin", and location thereof.

The comment by the Examiner in Item 2 on page 2 of the Office Action mailed March 5, 2007, that if the insulating resin composition layer is made of one layer, "the structure of front and rear outermost layers as recited in claim 5 is not clear", is noted. It is respectfully submitted that claim 5 as presently amended is clear with respect to sub-layers mainly made of thermoplastic resin, where there is only one sub-layer or more than one sub-layer (including where such at least one sub-layer is placed at "at least one" of front and rear outermost layers of the insulating resin composition layer). In view of present amendments to claim 5, reconsideration and withdrawal of the objection thereto is respectfully requested.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner on the merits, patentably distinguish over the teachings of the reference applied by the Examiner in rejecting claims in the Office Action mailed March 5, 2007, that is, the teachings of U.S. Patent No. 6,518,514 to Suzuki, et al., under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that this reference as applied by the Examiner would have neither taught nor would have suggested such a connection board as in the present claims, having the specified insulating resin composition layer and the connection conductor formed so as to pass through the insulating resin composition layer in its thickness direction at a specified position, and wherein the connection conductor includes at least two metal layers. See claim 1.

More particularly, it is respectfully submitted that this reference would have neither taught nor would have suggested such connection board as in the present claims, having the specified connection conductor, and wherein each of the at least two metal layers of the connection conductor is disposed within the insulating resin composition layer, with the connection conductor being exposed at a surface of the insulating resin composition layer. See claims 40 and 41.

Moreover, it is respectfully submitted that the teachings of this reference applied by the Examiner would have neither taught nor would have suggested such a connection board as in the present claims, having features as discussed previously in connection with claim 1, and, moreover, wherein the at least two metal layers include a first metal layer of a first metal and a second metal layer of a second metal different from the first metal (see claims 42 and 47); more particularly, wherein the first metal layer is thicker than the second metal layer (see claims 43, 44, 48 and 49), and the second metal is a more expensive metal than the first metal (see claims 43 and 48).

Furthermore, it is respectfully submitted that the teachings of the applied reference would have neither disclosed nor would have suggested such connection board as in the present claims, having features as discussed previously in connection with claim 1, and, moreover, wherein at least one sub-layer of the insulating resin composition layer, which is at least one of a front surface layer or a rear surface layer of the insulating resin composition layer, contains a liquid crystal polymer (see claim 45); and/or wherein the connection board further comprises a conductor circuit electrically connected to the connection conductor (see claim 2), with the conductor circuit being a metallic layer (see claim 3), an exposed portion of the connection conductor being covered with metal (see claim 4); and/or wherein a surface layer of the insulating resin composition layer is mainly thermoplastic (see claim 5); and/or wherein the insulating resin composition layer includes at least two sub-layers (see claim 46).

The invention as claimed in the above-identified application is directed to a connection board, particularly useful in connection with providing multi-layer wiring substrates and packages capable of providing a high density.

As described on pages 2-4 of Applicants' specification, various inter-layer connection techniques have been proposed in order to obtain reduction in costs, and to provide a high density, for connection boards. As one technique that has been proposed, a bump is formed on a wiring of a substrate by printing a conductive paste; and, then, an inter-layer connection insulating material in a state of B stage and a metallic layer are disposed, and the bump is inserted within a mold resin by pressing so as to be conductively connected to the metallic layer. Another technique includes embedding plated wires into an elastomer in its thickness direction, for connecting two conductors.

However, previously proposed techniques have various problems, as described in the paragraph bridging pages 3 and 4, and the first full paragraph on page 4, of Applicants' specification.

Against this background, Applicants provide a structure wherein inter-layer connection can be performed only at required positions without performing a filling step, a good via structure with good electrical connection can be provided, reliably connecting with a fine wiring circuit, high mechanical and thermal precision can be accomplished, and multiple layers can be formed. Applicants have found that by utilizing the connection board including the connection conductor as in the present claims, the connection conductor including at least two metal layers, features as discussed previously are achieved. In particular, through use of the at least two metal layers for the connection conductor, an economical connection conductor is achieved, having excellent mechanical strength. Note, for example, pages 20 and 21 of Applicants' specification.

Suzuki, et al. discloses a circuit board which includes (1) not less than two wiring layers; (2) an insulator layer for electric insulation between the wiring layers; and (3) an inner-via-hole conductive member provided in the insulator layer in a thickness direction of the insulator layer for electric connection between the wiring layers. This patent goes on to disclose that the insulator layer is made of a composite material containing an organic resin and a material having a smaller thermal expansion coefficient than that of the organic resin, and includes a surface part, a core part and a surface part laminated in the stated order, the surface part having a relatively high content of the organic resin, and the core part having a relatively low content of the organic resin. This patent goes on to describe that the wiring layers have a land portion that is connected with the inner-via-hole conductive member, the land portion being embedded so as to be substantially in contact with

the core part, and the inner-via-hole conductive member having a thickness substantially equal to a thickness of the core part. Note column 2, lines 14-37. See also column 3, lines 36-42; and column 4, lines 26-29, 37-40 and 47-50. Note also column 6, lines 6-10 and 40-50. This patent further discloses that in the configuration of the circuit board, the inner-via-hole conductive material preferably is made of a composite material of a conductive filler and an organic resin; and that, in this case, the conductive filler preferably is made of at least one selected from the group consisting of gold, silver, copper, nickel, palladium, lead, tin, indium and bismuth, alloys of these, and mixtures of these. See column 5, lines 36-43. Note also column 7, lines 1-6.

It is emphasized that in the circuit board of Suzuki, et al., the inner-via-hole conductive member is a single member, e.g., preferably made of a composite material of a conductive filler and an organic resin. It is respectfully submitted that this patent does not disclose, nor would have suggested, such structure as in the present claims, including wherein the connection conductor includes at least two metal layers, and advantages thereof; and/or other features of the present invention as discussed in the foregoing, and advantages thereof.

With respect to the prior art rejection, the Examiner refers to Fig. 2 and Figs. 3A-3E of Suzuki, et al., as disclosing, inter alia, connection conductor 209 and a conductor circuit (circuit formed on the insulating layer, see Figs. 3C and 3E) which is electrically connected to the connection conductor. As can be appreciated from the portions of Suzuki, et al., referred to by the Examiner, Suzuki, et al. shows a single inner-via-hole conductive member. It is respectfully submitted that this disclosure would have taught away from the presently claimed subject matter, having, inter alia, at least two metal layers included for the connection conductor, as well as other features as discussed in the foregoing.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently pending in the above-identified application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Authorization is herein given to charge any shortage in the fees, including extension of time fees and excess claim fees, to Deposit Account No. 01-2135 (Case No. 1204.43988X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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